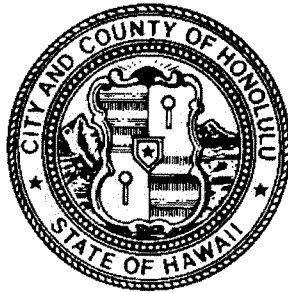


**GENERAL SAFETY
TAILGATE LESSON PLAN**

Hand Tool Safety (Cutting Tools)



CITY AND COUNTY OF HONOLULU
DEPARTMENT OF HUMAN RESOURCES
Division of Industrial Safety and Workers' Compensation

TAILGATE LESSON PLAN

HAND TOOL SAFETY

Cutting Tools: Saws, Hacksaws, Snips and Knives (Cane Knife, Bill Hook/Machete, Carton Cutter and Sickle)

The following information has been prepared for tailgate sessions with your employees. Discuss this topic with each of your workers within two weeks from the date you receive this. Keep this instruction sheet for future sessions and as reference material. Also keep a record of your employees who have received this tailgate lesson.

General Instructions

- A. Know your hand tools. Employees must be trained to use tools properly and safely.
- B. Use personal protective equipment such as safety shoes, safety goggles, apron, hard hat, dust mask or respirator, mesh gloves (for working with sharp objects and sheet metal), insulated gloves (for working with electrical wire), etc. [Figure 1]. Avoid wearing neck chains, rings, watches and other jewelry that might snag tools, machines and other moving equipment.

FIGURE 1

DRESS FOR THE JOB

Depending on what you're doing, you may need . . .

SAFETY GOGGLES OR GLASSES WITH SIDESHIELDS

To protect eyes when hammering, sawing, drilling, chipping or doing any work that may cause flying particles.

WORKGLOVES

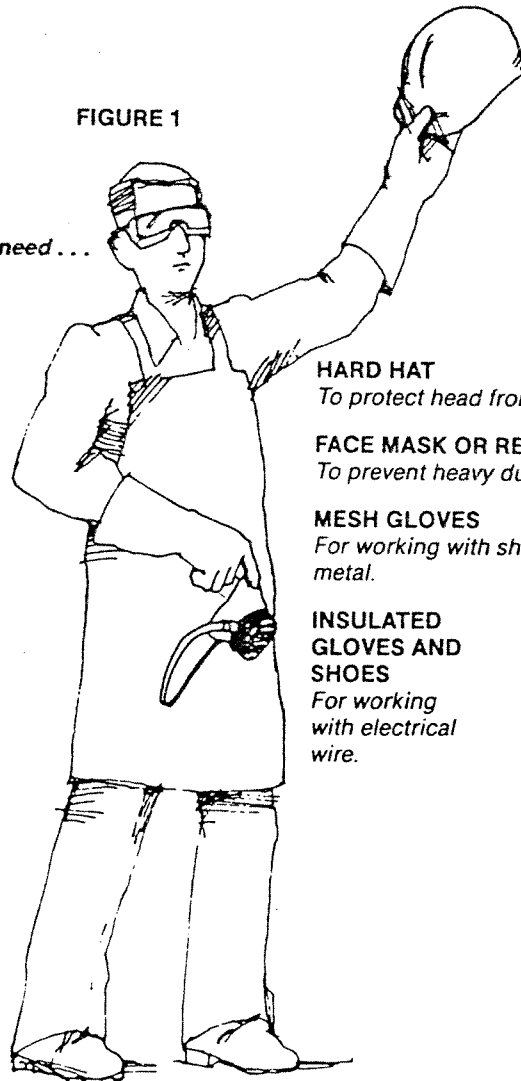
To protect hands and fingers.

APRON

To protect body from sharp objects and protect your clothes.

STEEL-TOED WORKBOOTS

To protect feet from dropped objects.



HARD HAT

To protect head from falling objects.

FACE MASK OR RESPIRATOR

To prevent heavy dust inhalation.

MESH GLOVES

For working with sharp objects, sheet metal.

INSULATED GLOVES AND SHOES

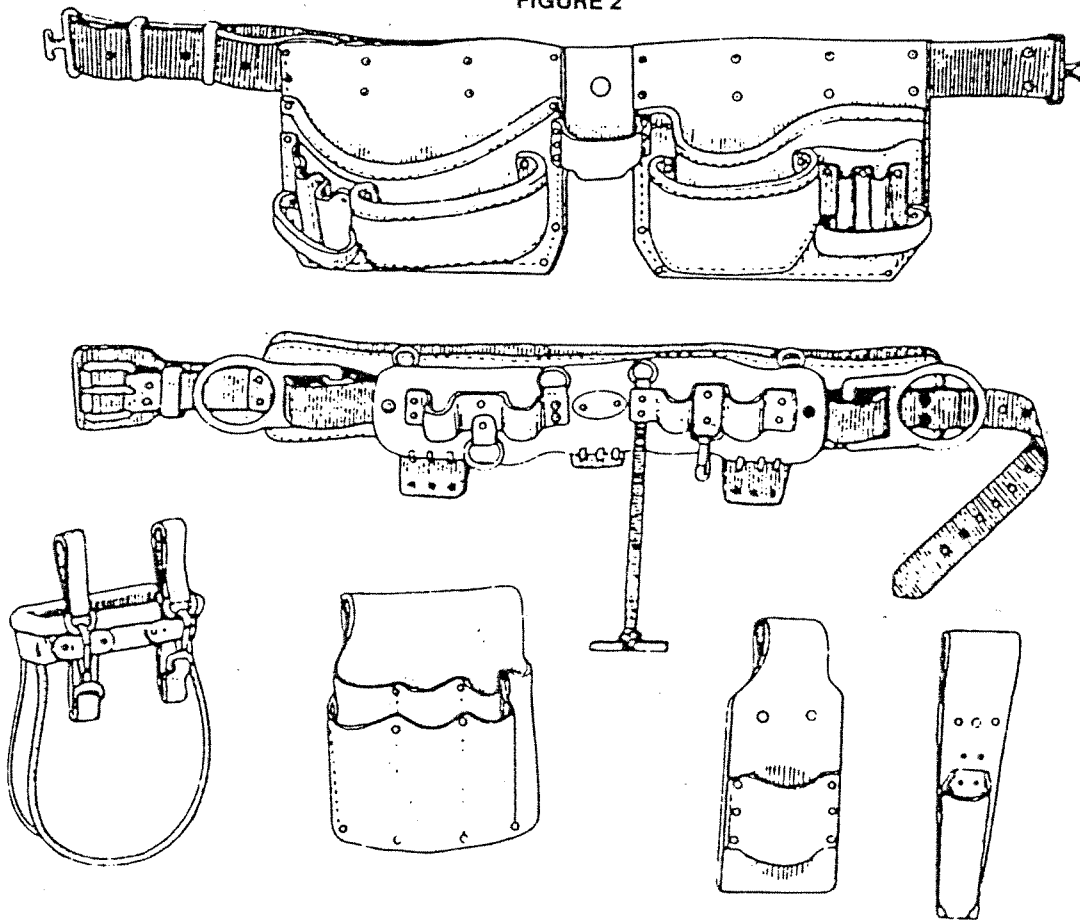
For working with electrical wire.

- C. Inspect work area. Remove objects and debris that may damage tools or pose a hazard when hand tools are used.
- D. Inspect your hand tools before each use. Do not use defective or damaged hand tools and report any problems to your supervisor. Replace splintered or loose handles.
- E. Select the right tool for the job. Do not substitute an improper tool to complete a job. Substituting an improper tool increases the chance of hurting yourself and others, and also contributes to poor quality work. Always select the proper sized tools.
- F. Use a carrying belt or box to transport your hand tools. Never carry tools, especially pointed or cutting tools, in your pocket. When climbing a ladder or scaffolding with tools, always carry them in a tool belt [Figure 2].

CARRY BELT FOR TOOLS

Miscellaneous tool holders and pouches. Equipment of this type frees hands while climbing and working on ladders, poles, and other elevated areas.

FIGURE 2

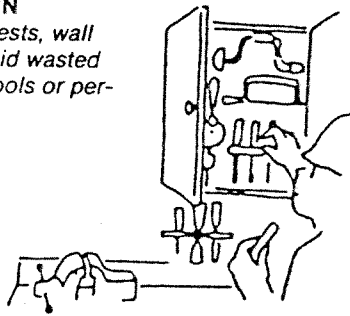


- G. Make sure that you have adequate lighting when using hand tools. No job is safe unless you can see what you're doing. Also, avoid cluttering your work area and keep bystanders away.
- H. Hand tools should be kept clean and dry, and stored properly after each use to prevent them from becoming damaged or causing personal injury [Figure 3].
1. Store tools in cabinets, tool chests, wall racks and in designated storage areas.
 2. Sheath sharp tools and keep them in a drawer or tray.
 3. Knives and other tools with sharp edges should never be left lying on benches or other places where they may cause hand injuries. When not in use, they should be kept in racks with the edges guarded.
 4. Never store large, heavy tools, such as axes, overhead or in a place where they could fall and injure someone.
 5. Keep tools in groups by type such as hammers, screwdrivers, wrenches, etc.

FIGURE 3

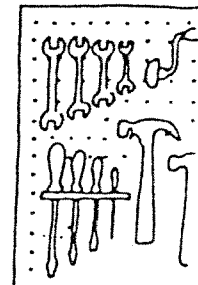
STORE TOOLS IN

cabinets, tool chests, wall racks, etc. to avoid wasted time, damaged tools or personal injury.



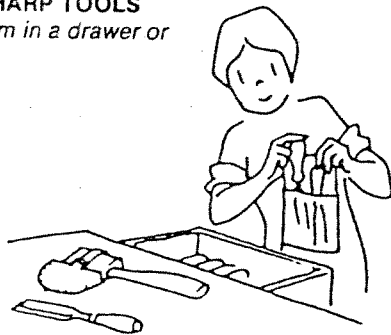
KEEP TOOLS IN GROUPS

by type: screwdrivers, wrenches, hammers, etc. Keep frequently used tools most accessible.

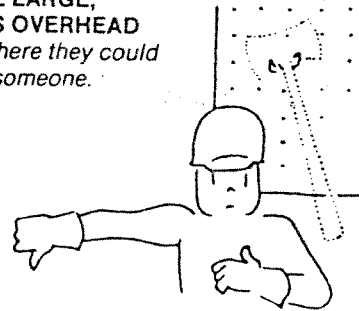


SHEATHE SHARP TOOLS

and keep them in a drawer or tray.



NEVER STORE LARGE, HEAVY TOOLS OVERHEAD
or in a place where they could fall and injure someone.



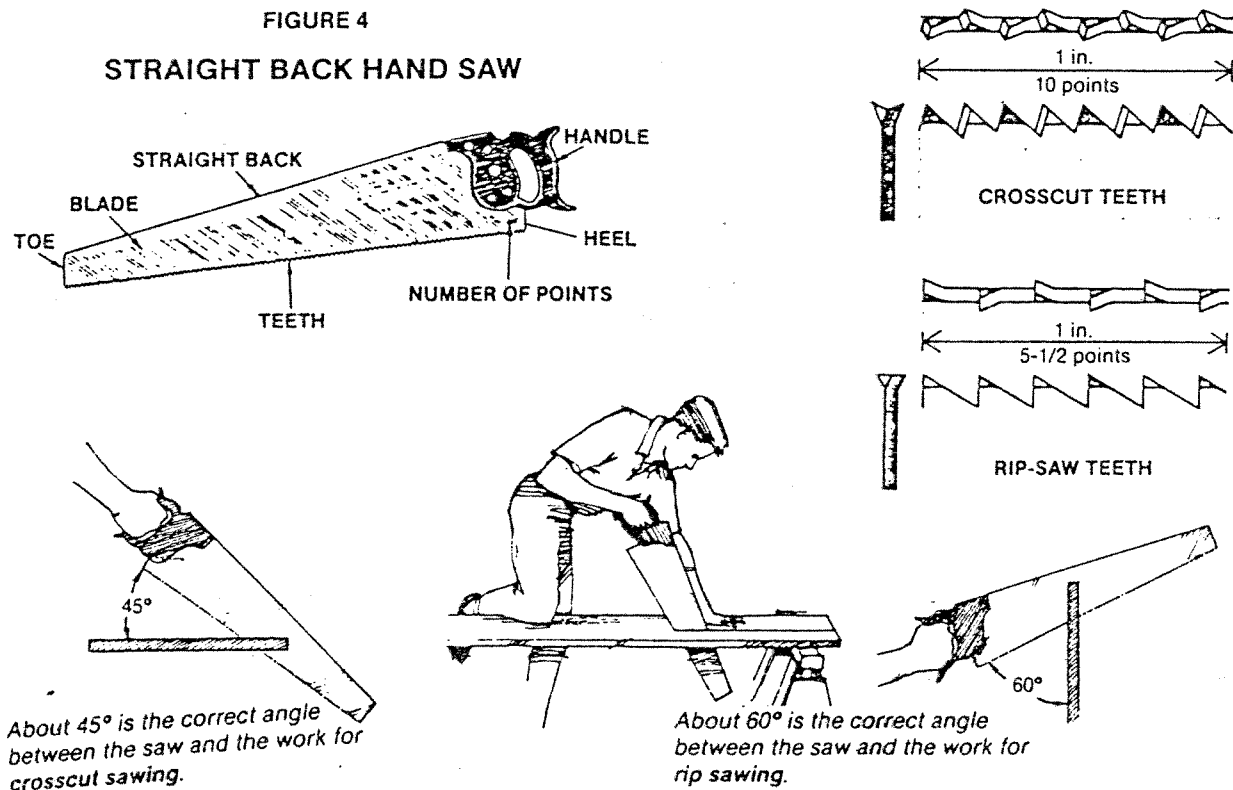
CUTTING TOOLS

Cutting tools, particularly knives, are more frequently the source of disabling injuries than any other hand tool. The principal hazard in the use of knives is that the hand may slip from the handle onto the blade or that the knife (including cane knives and sickles) may strike the body or free hand. The following instructions were prepared to help employees use cutting tools safely and properly on and off the job.

Safety Tips on Cutting Tools

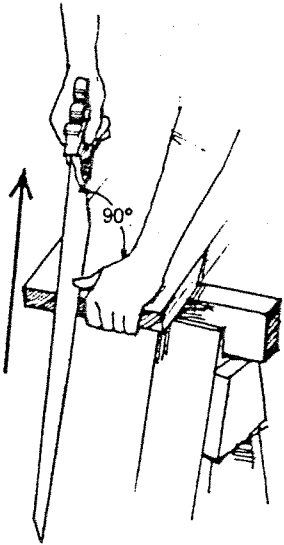
- A. Always wear safety goggles to protect your eyes. Also wear safety shoes, gloves and other personal protective equipment, as necessary.
- B. Before starting any cutting tasks, check your work area to be sure that people and objects are at a safe distance from where you will work.
- C. Never strike a metal surface with either end of any wood cutting hand tools such as knives, sickles, carpenter's saws, etc.
- D. Keep your eyes on the object that you are cutting, keeping your hands and body clear of the path of your cutting stroke.
- E. Keep your cutting tools sharp. Tools with dull edges are dangerous because they may slip off the material and cause a serious hand injury. Protect the edges by covering them with a sheath when not in use.
- F. A handle guard or a finger ring (and swivel) on the handle of knives and other cutting tools can prevent the hands from slipping onto the blade.

HAND SAWS [Figure 4]: Select the proper saw for the task. For cutting across the grain of the wood, use a crosscut saw. For cutting with the grain, use a rip saw. The differences between the two types of saws are their teeth angle and shape. For fast crosscut work, use a coarse saw with 4 to 5 points per inch of blade; for smooth, accurate cutting of dry wood, use a fine saw with 8 to 10 points per inch. For ripping, use a coarse saw for thick wood stock and a fine saw for thin stock. The number of points per inch is normally stamped on the blade.



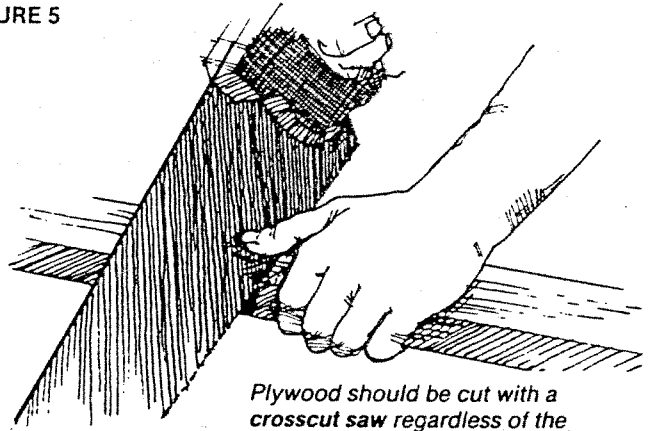
WORK/SAFETY TIPS:

1. Make sure the wooden material being cut is free from nails and other obstructions. Also, get firm support for the material being cut.
2. Start cut by drawing saw back toward you. Steady saw with thumb held high on the side of the blade. Hold thumb and fingers a safe distance from the cutting edge of the saw [Figure 5].



Start the saw cut by drawing the saw backward. Hold the blade square to the stock. Steady it at the line with the thumb.

FIGURE 5

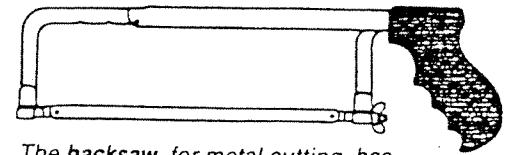


Plywood should be cut with a crosscut saw regardless of the direction of the surface grain. When sawing any wood, use your thumb to guide the draw strokes at the start, but keep thumb clear of cutting teeth.

3. Use slow deliberate strokes and apply pressure on downward strokes.
4. Always hold the handle of the saw while cutting or transporting it within the work area.
5. When not in use, saws should be wiped off with an oily rag and kept in racks or hung by the handle to prevent the teeth from being dulled. Saws should be stored in a safe location where they will not fall and injure people.

HACKSAWS [Figure 6]: Saw blade should be adjusted and tightened in the frame to prevent buckling and breaking, but not too tight to break off the pins that support the blade. Install blade with the teeth pointing forward. Use blades with 14 teeth to the inch for cutting soft metal; 18 teeth for tool steel, iron pipe, hard metal and general shop use; 24 teeth for drill rods, sheet metal, copper and brass, and tubing; and 32 teeth for tubing and thin sheet metal of less than 18 gage or 1.2mm thick.

FIGURE 6

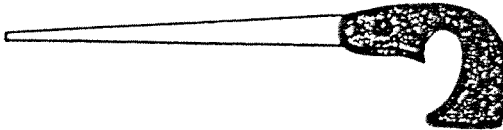


The hacksaw, for metal cutting, has a rigid frame that fits blades 8 to 12 inch long. High-speed steel blade mounts with teeth slanted away from handle and is drawn taut by a wingnut.

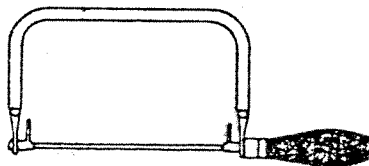
WORK/SAFETY TIPS:

1. Apply pressure on the forward stroke only. Lift the saw slightly and pull back in the cut lightly to protect the teeth.
2. If the blade is twisted or too much pressure is applied, the blade may break and cause injury to the hands.
3. Cutting speed of 40 to 60 strokes per minute is recommended.
4. Cut cautiously and slowly when starting an old cut after changing to a new blade; the blade may bend and break because the set of teeth on the new blade is thicker than that of the used blade.

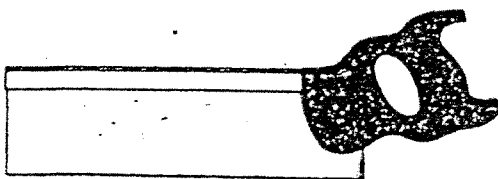
OTHER TYPES OF SAWS



Compass saw has narrow, tapered blade for cutting curves or starting from bored hole. It is similar to the keyhole saw, which was once used to cut keyholes in wooden doors.



Coping saws, for cutting small-diameter curves, have spring steel frames with tension adjustment to hold blades taut. Blades are 1/16 to 1/8 inch wide, and from 6 to 6-5/8 inch long. The blades mount to face in any direction.



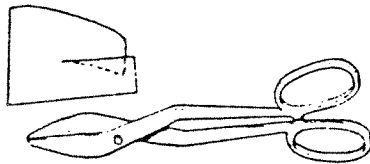
The backsaw, used for joint cutting, has reinforced back edge to keep blade rigid. Typical lengths are 10 to 16 inch. A longer version called a miter box saw runs from 22 to 26 inches. To cut smoothly, teeth are finer than on crosscut or rip saws.

HAND SNIPS [Figure 7]: Snips should be heavy enough to cut sheet metal easily so that the worker needs only one hand on the snips and can use the other hand to keep the edges of the cut material pulled aside. The material should be well supported before the last cut is made so that the cut edges do not press against the hands. Snips are designed for either straight or circular cuts. Those used for thicker sheet metal and harder materials have longer handles than those used for cutting thin, softer materials.

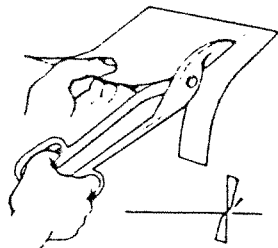
WORK/SAFETY TIPS:

1. In addition to wearing safety goggles, wear leather or heavy canvas work gloves to prevent hand cuts or scratches due to handling sharp edges of the sheet metal.
2. When cutting long sheet metal pieces, push down the sharp edges or slivers after cutting.
3. Do not use hand snips to cut wire. Wire cutting pliers are more suited for the job.

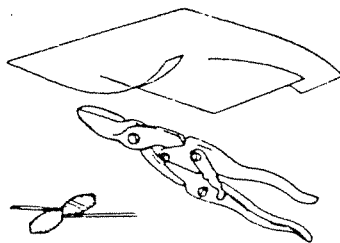
FIGURE 7



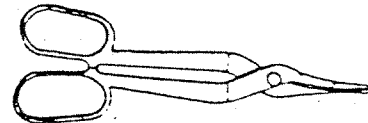
If you are right-handed, cut so that the waste is on the right, as shown above.



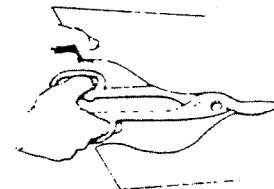
The straight pattern snips are generally used for making straight cuts. They can also be used for making shallow curves.



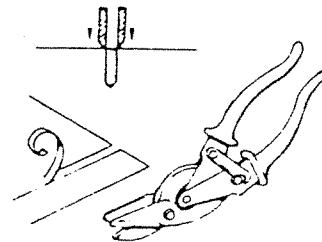
Straight cut snips are used for making straight cuts as well as shallow cuts to right or left.



The **duckbill snip** will cut smooth curves in sheet metal in either direction. They can also be used for straight cuts, but not as satisfactorily as the regular straight pattern snips.



The **duckbill snip** can be used for straight cutting as well as cutting curves. Make certain that the bolt holding the blades together is tight; looseness between the blades will cause ragged cuts.



Pipe and Duct Snip. This type of snip has a compound action. In use, it cuts out a narrow section of metal equal to the width of the center blade. The work on either side of the blade tends to stay flat as only the narrow waste takes a curl as it is cut out. It is used for cutting panel openings in gutter and downspout work where metal distortion on either side of the cut is not wanted.

KNIVES [Figure 8]. Employees who must carry knives with them on the job should keep them in sheaths or holders. Never carry a sheathed knife on the front part of a belt. Always carry it over the right or left hip, toward the back. This will help prevent severing a leg artery or vein in case of a fall.

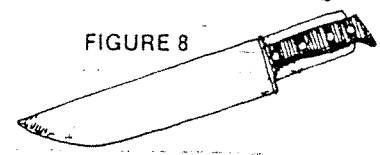


FIGURE 8

CANE KNIFE [Figure 9]: This knife was designed to cut cane stalks but is now used for various purposes such as cutting branches. It has a hook at the tip of the upper front end of the knife which is used to draw the cane stalk and materials to the user. The cane knife is used with a downward stroke to cut the stalk. Special care must be taken to prevent cutting the user's legs and the lower portion of the body.

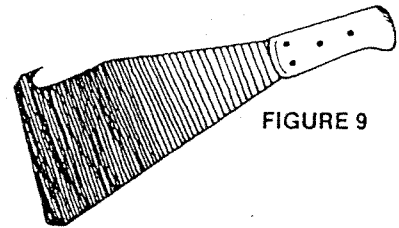
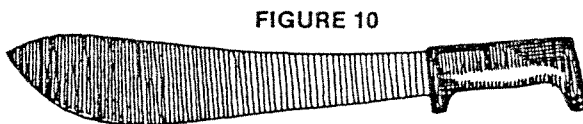


FIGURE 9

BILL HOOK AND MACHETE [Figure 10]: These knives have a wide blade and are fitted with a straight handle. They are used to chop wood, stalk and branches, and clear thick undergrowth. The tang of the blade passes right through the hardwood handle and is riveted. The swelling at the end of the handle prevents these knives from slipping out of the hand when they are swung with a chopping action.



Machete. A large, heavy knife used for cutting cane and clearing paths.

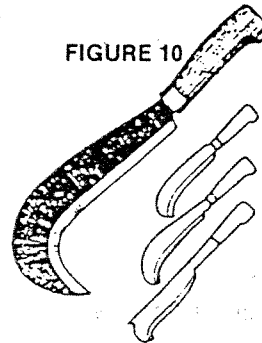


FIGURE 10

Bill Hook. Blade length is 9 to 10 inches. Used to cut and lay hedges and split branches.

CARTON CUTTER: This knife is safer than hooked or pocket knives for opening cartons. They not only protect the user, but eliminate deep cuts that could damage carton contents. Frequently, damage to contents of soft plastic bottles may not be detected immediately; subsequently leakage may cause chemical burns, damage other products, or start a fire.

WORK/SAFETY TIPS:

1. The cutting stroke of knives should be away from the body. If that is not possible, then the hand and body should be in the clear and a heavy apron or other protective clothing should be worn. Where possible, a rack or holder should be used for the material to be cut.
2. Never leave open-blade knives hidden under materials such as scrap paper, wiping rags or among tools in the work boxes or drawers. Knives should also be kept off benches or other places where they may cause hand injuries.
3. The blade should be wiped with a towel or cloth with the sharp edge turned away from the wiping hand. Wash knives separately from other tools or utensils and in such a way that they will not be hidden under soapy water.
4. Horseplay should be strictly prohibited around knife operations.
5. To cut corrugated paper, a hooked linoleum knife permits good control of pressure on the cutting edge and eliminates the danger of the blade suddenly collapsing.
6. Knives should be stored separately from other tools to protect employees as well as the cutting edges of the knives.

SICKLE [Figure 11]: Primarily used to cut grass, a sickle is a curved knife with the blade angled upward to allow the blade to be swept parallel to the ground.

SICKLE

Sickle. Other names: Reaping hook, bagging hook, grass hook. Blade length varies up to 26 inches. Used to cut long grass and weeds.

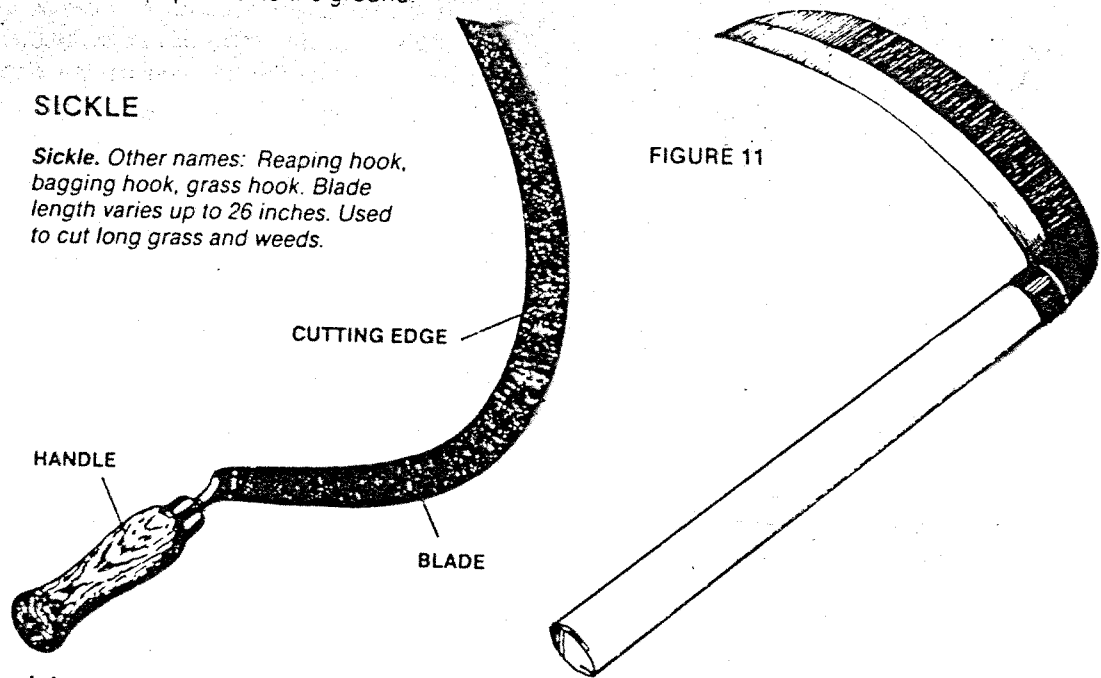


FIGURE 11

Information on sickles, machetes and cane knives provided by Kotake Shokai Ltd.

WORK/SAFETY TIPS:

1. Always hold the handle of the sickle. Do not place your hands on any part of the blade.
2. Use the sickle to cut only long grass, weeds or vines. A sickle should not be used for cutting tree branches and other bulky or thick materials.
3. Grass cutting work:
 - A. Clear the work area of objects, such as rocks, branches, etc., that may damage the sickle or cause it to deflect while performing the cutting task.
 - B. The sickle should be swept with a right to left, sideways movement for a right handed person and vice-versa for a left handed user [Figure 12].
 - C. Keep free hand, legs and body clear from the path of the sickle. For right handed users, the left foot should be positioned slightly behind the right foot and vice-versa for a left handed user. Keep your back straight and knees bent slightly to prevent a back strain [Figure 12].
 - D. Hold back overhanging grass with a stick or dowel (2-1/2 foot length or longer) if necessary, but **never** with your hand [Figure 12].
4. Do not use a sickle with a loose handle. Notify your supervisor to replace or repair sickle.
5. Sickles that have a single bevel are sharpened on the beveled side only. They are also available with a double bevel for right or left handed user, and are sharpened on both sides of the blade. You can use an oval-sectioned scythestone, a handled stone such as the Crystolon Home and Garden Sharpener or a smooth, single cut (mill) file. Keep your sickle sharp for easier and safer cutting results.

FIGURE 12



Using the Sickle:

With a natural sweeping movement of the hand and wrist, slice sideways through the grass. Hold back overhanging growth with a stick.

ALWAYS PUT SAFETY FIRST WHENEVER YOU USE HAND TOOLS

